DSRIP Risk Adjustment Methodology

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Agenda

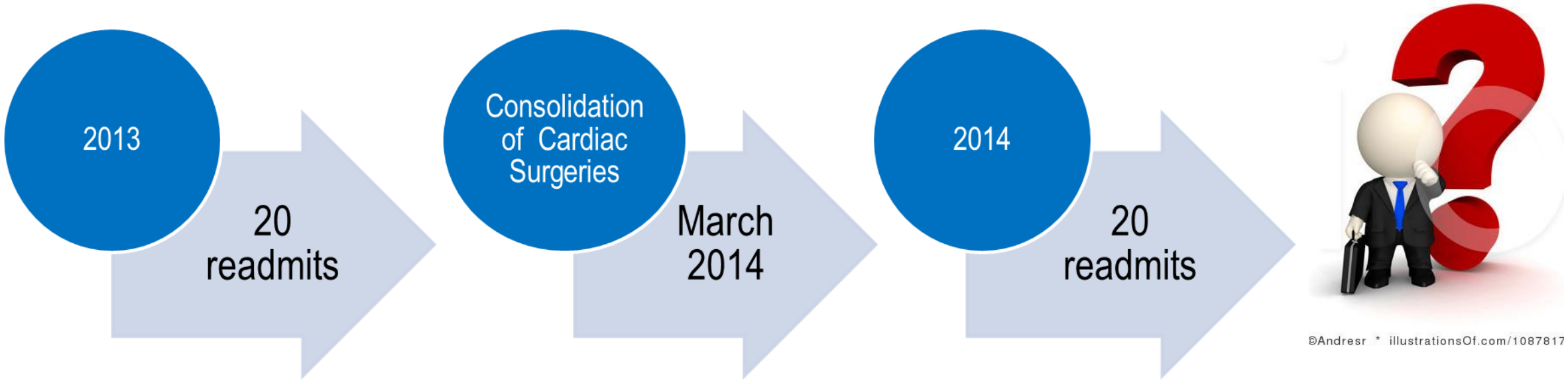
- DSRIP Update
- Introduction to Risk Adjustment
- How to do a Risk Adjusted Readmission Rate
- Considerations

After reading the DSRIP specifications

What is Risk Adjustment

- Risk Adjustment is basically a corrective tool used to level the playing field regarding the reporting of patient outcomes, **adjusting** for the differences in **risk** among specific patients.
- Risk Adjustment (aka Severity Adjusted) is the process of adjusting expected volumes to account for the case mix of the facility or category being compared.

Why do we risk adjust? –
Imagine this example looking at Cardiac Surgery readmissions



Did this hospital improve or get worse?

Example of risk adjusted

Year	2013	2014
Actual	20	20
Expected (risk adjusted)	17	21
Difference A-E	3.0	-1.0

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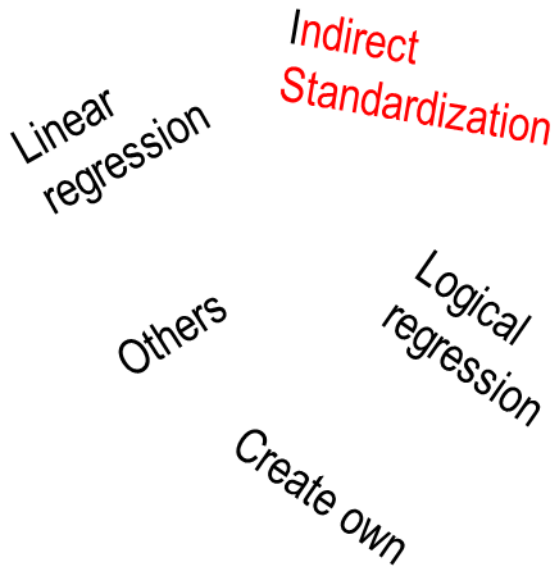
Did this hospital improve or get worse?

Risk Adjustment is a technique



- Same technique can be used for a number of measures
- Demand to understand risk adjusted readmission rates was high
- This presentation will use readmissions to illustrate the risk adjustment process
- Indirect standardization found to be a strong technique for comparing outcomes
- Other methods are valid as well

Considerations when calculating a risk adjusted rate.

- Definition of Timeline?
- Version of methodology?
- Definition of the numerator – what is the definition of a readmission?
- Definition of denominator – what defines the at-risk population you are comparing yourself with?
- Technique used?
- What are the risk adjustor variables?

Readmission measures

- 30 Day CMS All Cause Readmissions
  - Targeted to specific initial admission conditions
  - Assumes all readmissions for a condition are preventable
  - Minimal exclusions
  - Numerator - Initial Admission
- 30 day 3M ™ Potentially Preventable Readmissions (PPR)
  - Comprehensive, but can be used for targeted conditions
  - Not all readmissions are considered preventable
  - Many clinical exclusions
  - Numerator – Readmission Chain

An Overview of the Clinical Logic

Phase 1

- Group all records in APR DRG
- Identify Excluded Admissions and Non Events

Phase 2

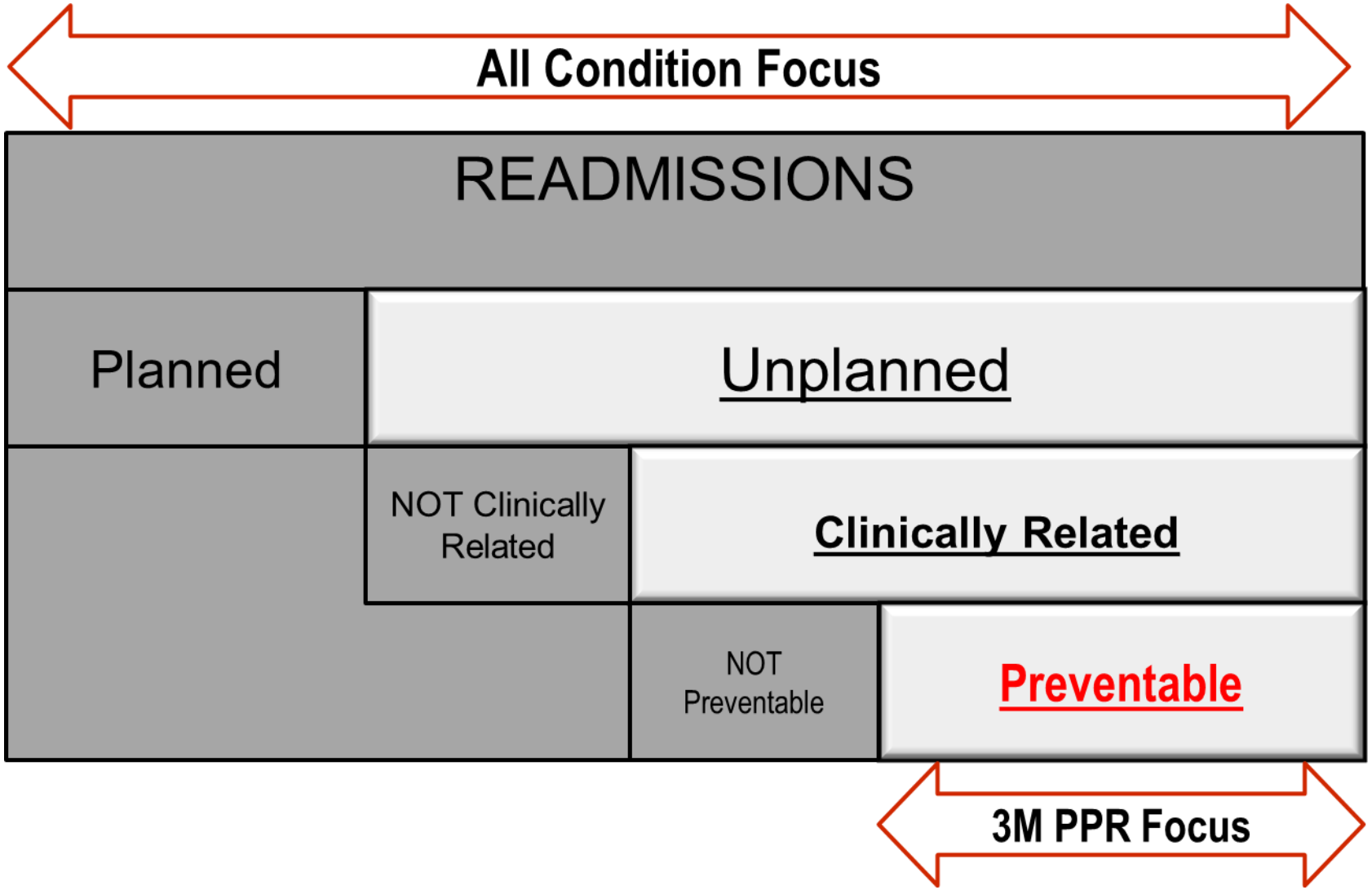
- Determine Preliminary Classification of remaining admissions

Phase 3

- Identify chains and Determine Final Classification of Admissions

Did this hospital improve or get worse?

Clinical Relevance Matrix



Definition of a Readmission

Hospital	Reason for Admission	Days Post Admission	Classification	PPR Chain	Attribution
St Elsewhere	Heart Valve Replacement		Initial Admission (Record Type = IA)	1	St. Elsewhere
St Elsewhere	Post Op infection	5	PPR (Record Type = RA)	1	
St Elsewhere	Ketoacidosis	15	PPR (Record Type = RA)	1	
St Elsewhere	Bronchitis	9	Initial Admission (Record Type = IA)	2	St. Elsewhere
County Hospital	Asthma	19	PPR (Record Type = RA)	2	

How to do a risk adjusted rate.

1. Create or obtain a risk adjusted readmission norm
2. Query for your At-Risk Population
3. Count the At-Risk Population records
4. Count the Actual number of Readmissions (or Chains)
5. Calculate the Expected number of Readmissions (or Chains)
6. Calculate the Actual and Expected rate
7. Calculate the Actual to Expected Difference

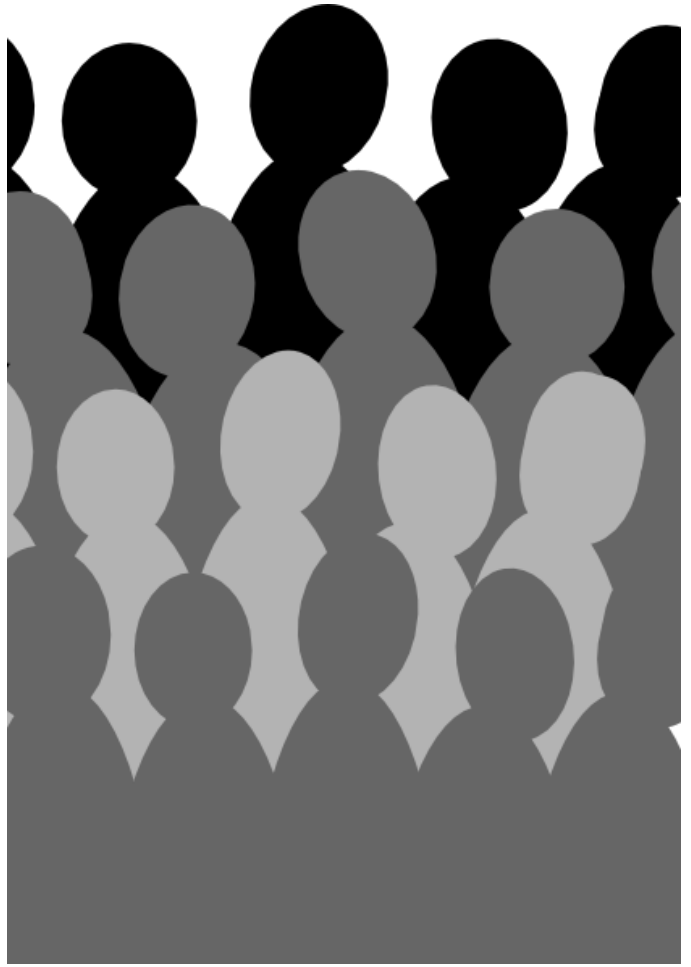
Create or Obtain a risk adjusted readmission norm- PPR.

Thanks Texas HHSC!

Norm (aka Benchmark)	Pros	Cons
Texas DSRIP PPR norm	Comparison against your actual regional peers.	It is constructed against preventable readmission to any hospital.
Florida ACHA norm	Convenience. Comes with PPR software can look at either readmits back to same hospital or across. Used in PPR reports (Pediatrics Norms available)	May not be representative of your population .
Vendor/Other norm	May be more representative. Ready made. Reporting may come with the service.	May be biased or less representative depending on population used. May not comply with software version, configuration.
Home grown	More representative	Overhead and no comparison outside self.

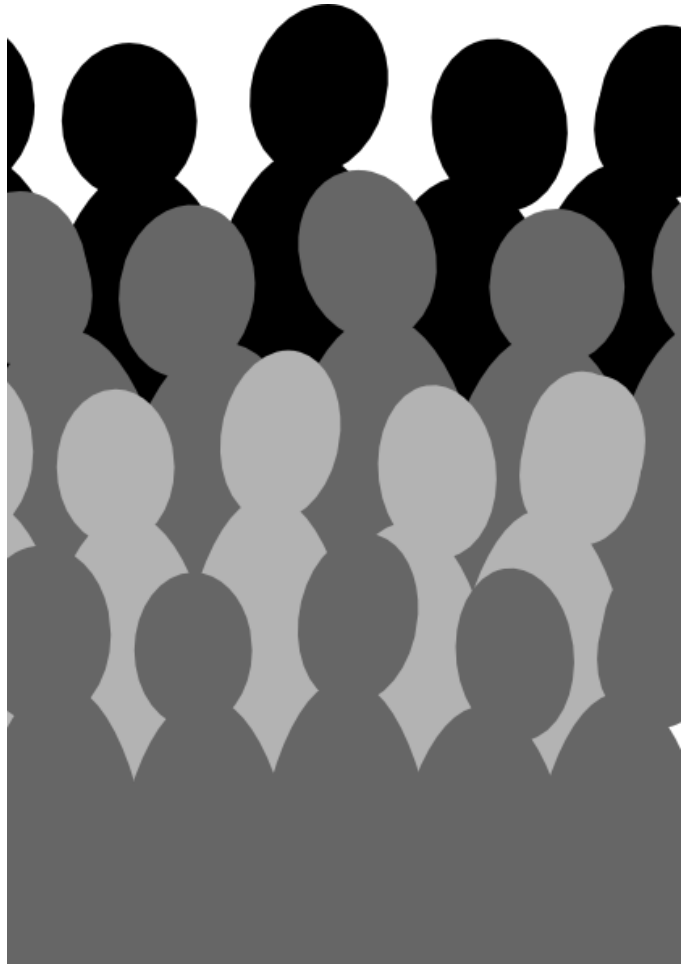
Query for your At-Risk Population

- Are all records considered at risk for Preventable or All Cause readmission?
- No.
  - PPR –
    - At Risk = All record – Excluded and Rejected records.
    - OR just count Record Type = IA and OA
  - All Cause
    - Follow CMS guidelines.
    - At Risk = All records – excluded admissions
    - LAMA and Deaths



Count the At-Risk Population records

- Sum the number of records that meet criteria to be at risk.



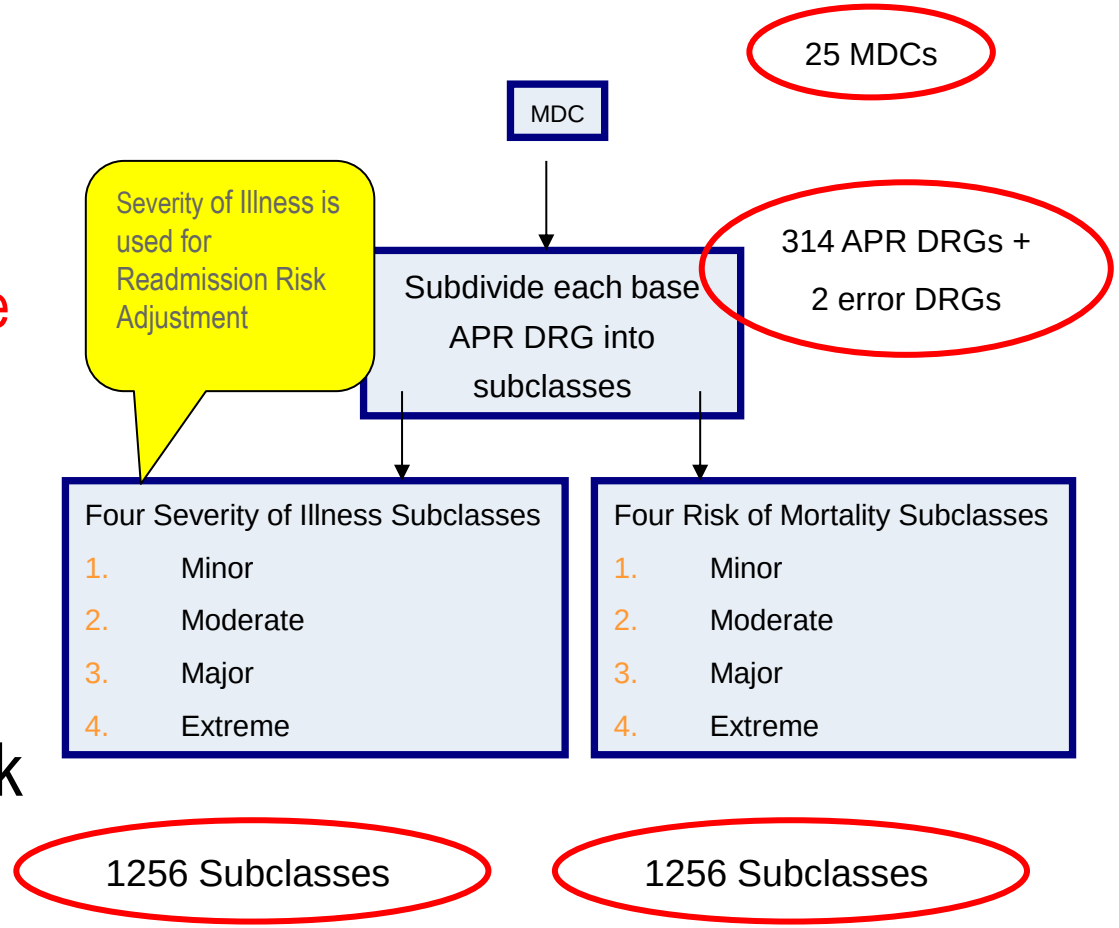
Count the Actual Number of Readmission Chains

Hospital	Reason for Admission	Days Post Admission	Classification	PPR Chain	Attribution
St Elsewhere	Heart Valve Replacement		Initial Admission (Record Type = IA)	1	St. Elsewhere
St Elsewhere	Post Op infection	5	PPR (Record Type = RA)	1	
St Elsewhere	Ketoacidosis	15	PPR (Record Type = RA)	1	

If you are using All Cause, follow the criteria from CMS.

Calculate the Expected number of Readmissions (or Chains)

- Decide on Risk Adjustor
  - APR DRG and SOI
  - Mental Health and Age
  - Both APR DRG/SOI and Mental Health/Age
  - MS DRG
  - Others
- For each At Risk Record, look up the PPR rate for the Discharge APR DRG and SOI found in the norm and then look up the Mental Health and Age factor.
- Sum the rates found on lookup.



Summary of APR DRGs

25 MDCs

MDC

Subdivide each base APR DRG into subclasses

314 APR DRGs +
2 error DRGs

Severity of Illness is used for Readmission Risk Adjustment

Four Severity of Illness Subclasses

1. Minor
2. Moderate
3. Major
4. Extreme

1256 Subclasses

Four Risk of Mortality Subclasses

1. Minor
2. Moderate
3. Major
4. Extreme

1256 Subclasses

Example of the sicker the patient the higher the risk of readmission

Chain Level Discharge APR_DRG	Chain Level Discharge SOI	Age Range	Mental Health Problem	TX Norms
045	1	18-84	0	0.0705
045	2	18-84	0	0.0935
045	3	18-84	0	0.1206
045	4	18-84	0	0.1246

Calculate the Expected number of Readmissions (or Chains) - The Texas HHSC PPR Norm

Chain_Level Discharge APR_DRG	Chain_Level Discharge SOI	Age_Range	Mental_Health_ Problem	TX Norms
003	1	18-84	0	0.0000
003	1	LT18	0	0.0000
003	2	LT18	0	0.0000
003	3	18-84	0	0.0000
003	3	LT18	0	0.0000
003	4	LT18	0	0.0000
004	2	18-84	0	0.0000
004	3	18-84	0	0.1114
004	3	LT18	0	0.0928
004	3	18-84	1	0.2159
004	3	LT18	1	0.1963
004	4	18-84	0	0.0803
004	4	LT18	0	0.0669
004	4	18-84	1	0.1557
004	4	GT84	1	0.1907
004	4	LT18	1	0.1416
005	2	18-84	0	0.0886
005	2	LT18	0	0.0738

Legend:

- Mental Health Problem
  - 0= No mental health
  - 1= Major mental health found
- Age Range:
  - LT18 = Less than 18 yrs old
  - 18-84 = 18 yrs old to 84 yrs old
  - GT84 = Greater than 84 yrs old.

Calculate the Expected number of Readmissions (or Chains) Look up APR DRG and SOI PPR Rate

Record Type Field	Pt. Age	Mental Health Flag	**Excerpt of TX HHSC PPR norm	Chain Level Discharge SOI	Expected Value
PPR output	PPR output	PPR output	**Excerpt of TX HHSC PPR norm	PPR Output	Norm Lookup
IA	23	0	**Excerpt of TX HHSC PPR norm	3	0.0150
OA	10	0	**Excerpt of TX HHSC PPR norm	1	0.0580
OA	89	1	**Excerpt of TX HHSC PPR norm	2	0.2699
IA	12	1	**Excerpt of TX HHSC PPR norm	2	0.1145
.....			**Excerpt of TX HHSC PPR norm		
Total			**Excerpt of TX HHSC PPR norm		Sum of all the Expected Values.

Chain_Level Discharge APR_DRG	Chain_Level Discharge SOI	Age_Range	Mental_Health_Problem	TX Norms
089	1	18-84	0	0.0291
089	1	LT18	0	0.0242
089	2	18-84	0	0.0000
089	2	LT18	0	0.0000
089	2	18-84	1	0.0000
089	2	LT18	1	0.0000
089	3	18-84	0	0.0150
089	3	LT18	0	0.0125
089	3	LT18	1	0.0264
089	4	LT18	0	0.2707

**Excerpt of TX HHSC PPR norm

Calculate the Actual PPR Rate and Expected PPR Rate

- Actual PPR Rate = Actual Volume of PPR Chains/At Risk Volume
- Expected PPR Rate = Expected Volume of PPR Chains/At Risk Volume

Calculate the Actual to Expected Difference

- Actual PPR Rate/Expected PPR Rate

How do I know if the Difference I see is the result of a fault in the system or just natural variation?

- Test of Significance
  - Cohran Mantel Hanzel Test
  - Chi Square (0,05 Probability)

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All Cause Risk Adjusted Rates

- Indirect Standardization works for this method as well.
- Risk Adjustor
  - MS DRG
  - APR DRG and SOI
  - Others
- Need to find an All-Cause benchmark or create a benchmark of your own using the same risk adjustment method as you plan to use for rate calcs

Using Payment Weights to interpret risk of Readmission

- Payment weights are weighted higher generally for surgeries
- Create a bias for surgical readmission rate when compared to medical readmission rates

APR DRG	Severity of Illness (SOI)	PPR Rate	Payment Weight
203 – Chest Pain	3	0.1005	0.6973
263- Gallbladder Removal	3	0.1062	1.6854

Pulling it all together.

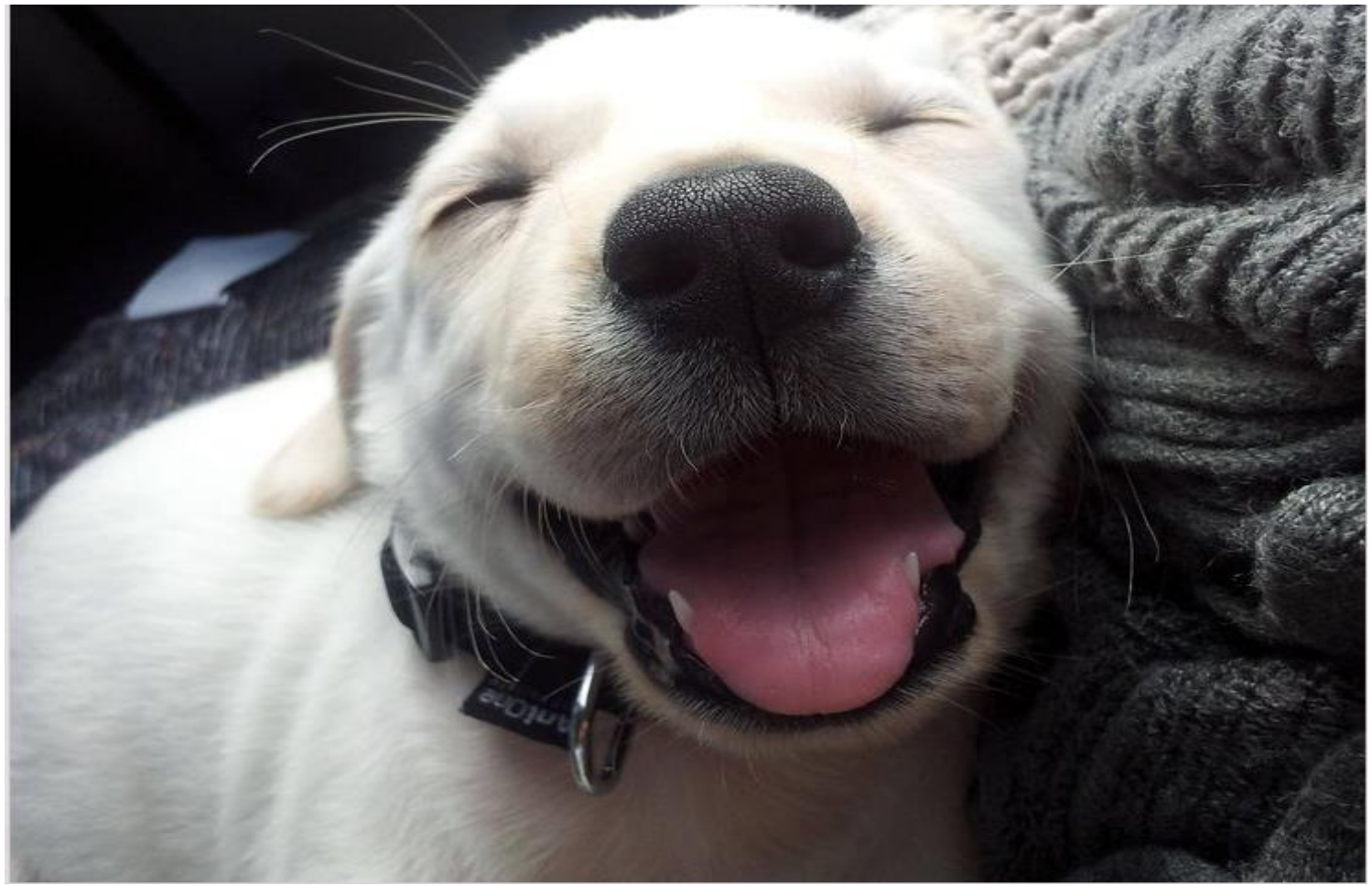
Category	Admissions	At-risk	Actual	Expected	ObservedRate	ExpectedRate	Difference	Significance
Medical	187	111	22	9.84	19.82	8.87	10.95	*
OB/GYN	9	9	0	0.15	0	1.64	-1.64	
Surgical	65	53	8	3.34	15.09	6.3	8.79	*
z--Overall	261	173	30	13.33	17.34	7.71	9.63	*

Service	Admissions	At-risk	Actual	Expected	ObservedRate	ExpectedRate	Difference
Cardiac Surgery	9	8	0	0.86	0	10.81	-10.81
Cardiology	71	39	9	2.49	23.08	6.39	16.69
Cardiovascular Surg	1	1	0	0.07	0	6.76	-6.76
Dermatology	3	2	1	0.9	50	45.00	-1.11
Diabetes	4	4	0	0.19	0	4.77	-4.77
Gastroenterology	8	6	1	0.43	16.67	7.22	9.44
General Medicine	3	3	0	0.14	0	4.61	-4.61

Pulling it together, part 2.

Service	APR	Description	Admissions	At Risk	Actual	Expected	ObservedRate	ExpectedRate	Difference
Cardiology	192	Cardiac catheterization for ischemic heart disease	7	7	1	0.28	14.29	4.01	10.28
Top 5 Reasons	APR DRG	Description	Med/Surg	No. PPRs	Days				
	198	Angina pectoris & coronary atherosclerosis	M	1	5				
		---------- ALL OTHER APR DRGS ----------		0	0				
		Total		1	5				
Service	APR	Description	Admissions	At Risk	Actual	Expected	Observed Rate	ExpectedRate	Difference
Cardiology	194	Heart failure	13	9	5	2.30	55.56	25.56	217.39
Top 5 Reasons	APR DRG	Description	Med/Surg	No. PPRs	Days				
	204	Syncope & collapse	M	1	9				
	422	Hypovolemia & related electrolyte disorders	M	4	5				
		---------- ALL OTHER APR DRGS ----------		0	0				
		Total		5	14				
Service	APR	Description	Admissions	At Risk	Actual	Expected	ObservedRate	ExpectedRate	Difference
Cardiology	197	Peripheral & other vascular disorders	4	4	2	0.29	50	7.2	42.8
Top 5 Reasons	APR DRG	Description	Med/Surg	No. PPRs	Days				
	203	Chest pain	M	1	9				
	720	Septicemia & disseminated infections	M	1	3				
		---------- ALL OTHER APR DRGS ----------		0	0				
		Total		2	12				

To summarize…..



Questions?
Thank you for your attention